

ABSTRACT OF THE DISCLOSURE

The semiconductor device fabrication method comprises the step of forming gate electrode 20 on a semiconductor substrate 10 with a gate insulation film 18 formed therebetween; the step of implanting dopants in the semiconductor substrate 10 with the gate electrode 20 as the mask to form dopant diffused regions 28, 36; the step of forming a silicon oxide film 38 on the semiconductor substrate 10, covering the gate electrodes 20; anisotropically etching the silicon oxide film 38 to form sidewall spacers 42 including the silicon oxide film 38 on the side walls of the gate electrode 20. In the step of forming a silicon oxide film 38, the silicon oxide film 38 is formed by thermal CVD at a 500 - 580 °C film forming temperature, using bis(tertiary-butylamino)silane and oxygen as raw materials. Silicon oxide film 38 is formed at a relatively low film forming temperature, whereby the diffusion of the dopant in the dopant diffused regions 28, 36 forming the shallow region of the extension source/drain structure can be suppressed.